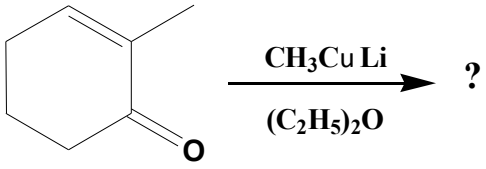
91104 120 MINUTES

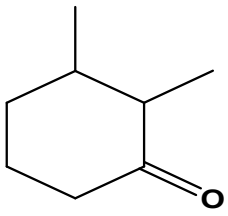
1. In the process of radioactivity
   A) Beta rays consisting of helium nuclei are emitted
   B) Gamma rays are emitted from the nuclei
   C) Electrons are emitted as alpha rays
   D) Protons are absorbed

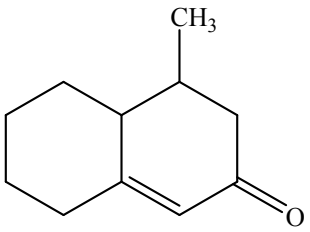
2. Sodium bicarbonate is useful as a fire extinguisher because
   A) It serves as blanket for fire
   B) It releases water which extinguishes fire
   C) It emits a foam which extinguishes fire
   D) It decomposes on heating to give carbon dioxide

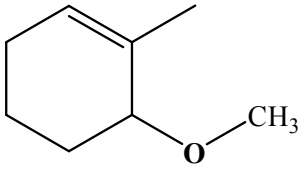
3. Which of the following types of glasses is/are used for making optical instruments;
   i. Flint glass, ii. Borosilicate glass, iii. Pyrex glass, iv. Soda glass
   A) i only B) i and ii
   C) i, ii and iii D) i, ii, iii and iv

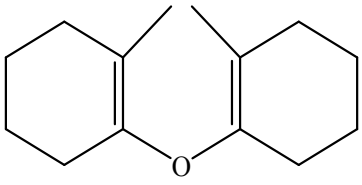
4 Which among the following is the product of the reaction?



A) 

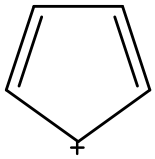
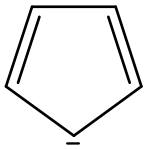
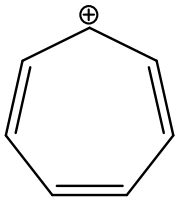
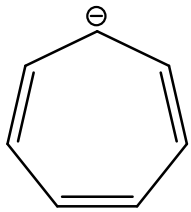
B) 

C) 

D) 

5. Dialkyl succinate however differ from other ester is that the enolate from the ester adds to the carbonyl group of the ketone. It describe:
   A) Clasen condensation B) Stobbe condensation
   C) Aldol condensation D) Reformatsky reaction

6. Which of the following show aromatic character?

I  II  III  IV 

A) I and III
B) II and IV
C) II and III
D) I, II, III and IV

7. Electrochemical equivalent is
   A) Amount of time taken in seconds when one gram of substance is deposited by one ampere of current
   B) Amount of substance deposited by one ampere current passing for one second
   C) Amount of current passing for one second to deposit one gram of substance
   D) Amount of substance deposited by one ampere current passing for one minute

8. For the first order reaction; A → B + C, rate of the reaction is given by

A) $k = \frac{2.303}{t} \log \frac{a-x}{a}$ B) $k = \frac{1}{t} \log \frac{a}{a-x}$

C) $k = \frac{2.303}{t} \log \frac{a}{a-x}$ D) $k = \frac{1}{t} \log \frac{a-x}{a}$

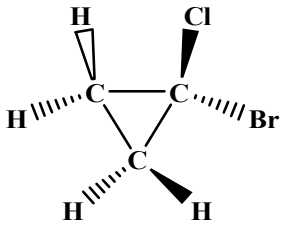
9. The distribution law holds correctly under which of the following conditions?
   A) The concentration of solute in two solvents should be high
   B) The concentration of solute in two solvents must be low
   C) The temperature should vary throughout the experiment
   D) The solute should undergo association or dissociation

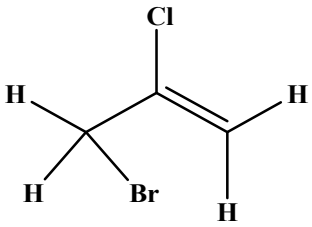
10. Which one of the following is the most favourable condition for the ionic bonding?
   A) High charge of ions, large cation and small anion
   B) High charge of ions, large anion and small cation
   C) Low charge of ions, large cation and small anion
   D) High charge of ions, small cation and small anion

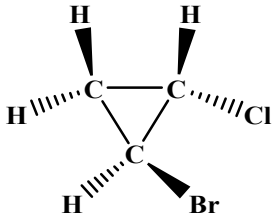
11. The order of increasing covalent character of the following compounds is
   A) $BaCl_2 < SrCl_2 < CaCl_2 < MgCl_2$
   B) $MgCl_2 < CaCl_2 < SrCl_2 < BaCl_2$
   C) $MgCl_2 < CaCl_2 < BaCl_2 < SrCl_2$
   D) $BaCl_2 < MgCl_2 < CaCl_2 < SrCl_2$

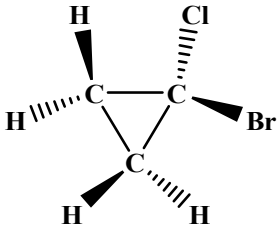
12. In a diborane molecule
    A) Two equivalent borons and six normal hydrogens are present
    B) Four bridged hydrogens and two terminal hydrogens are present
    C) Three bridged hydrogens and three terminal hydrogens are present
    D) Two bridged hydrogens and four terminal hydrogens are present

13. Which of the following isomers of C_3H_4ClBr is optically active?

A) 

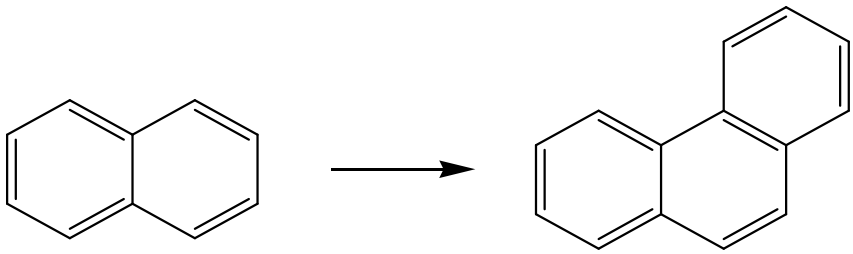
B) 

C) 

D) 

14. Which among the following is a pericyclic reaction?
    A) Hydroboration reaction B) Diels – Alder reaction
    C) Grignard reaction D) Reimer – Teimann reaction

15. The reaction for the conversion of



is an example of:

    A) Perkin reaction B) Dickman cyclisation
    C) Friedel – Crafts reaction D) Smiles reaction

16. The energy of a system in a definite state is fixed and is independent of the method of formation of the system or the method of attaining the energy is called
    A) Zeroth law
    B) First law of thermodynamics
    C) Second law of thermodynamics
    D) Third law of thermodynamics

17. A solution is said to be one normal when it contains
   A) One gram molecular weight of solute per litre of solution
   B) One gram molecular weight of solute per litre of solvent
   C) One gram equivalent weight of solute per litre of solution
   D) One gram equivalent weight of solute per 1000 gram of solution

18. The Arrhenius equation of effect of temperature on the rate constant of a reaction is:
   A) $k = e^{-Ea/RT}$ B) $k = \log \frac{Ea}{RT}$
   C) $k = \frac{Ea}{RT}$ D) $k = A.e^{-Ea/RT}$

19. Dichloromethane belongs to the point group of
   A) C_{2V} B) C_{3V}
   C) D_{4h} D) $D_{\infty h}$

20. $BeSO_4$ is soluble in water whereas $BaSO_4$ is insoluble because
   A) $BeSO_4$ is crystalline while $BaSO_4$ is amorphous
   B) $BeSO_4$ is ionic while $BaSO_4$ is covalent
   C) $BeSO_4$ has smaller lattice energy and high heat of hydration as compared to $BaSO_4$
   D) $BeSO_4$ has larger lattice energy and low heat of hydration as compared to $BaSO_4$

21. In the thermogram of a compound in Differential Scanning Calorimetry (DSC) is obtained by plotting
   A) Logarithm of weight loss versus temperature
   B) Change in heat flow versus temperature
   C) Change in weight versus temperature
   D) Logarithm of change in heat flow versus temperature

22. The reason for a double helical structure of DNA is due to the operation of
   A) Electrostatic attractions B) Van der Walls forces
   C) Dipole – dipole interactions D) Hydrogen bonding

23. Benzidine can easily be converted to 4,4'-diaminobiphenyl. Which one of the spectra can effectively be used to study the conversion?
   A) ^{1}H-NMR B) UV-Visible
   C) FT-IR D) Mass spectra

24. When $CH_3 – CH_2 – CH_2 – CH_2Br$ reacts with alcoholic potassium hydroxide, the major product is
   A) $CH_3 – CH_2 – CH = CH_2$ B) $CH_3 – CH = CH – CH_3$
   C) $CH_3 = CH - CH = CH_2$ D) $CH_3 – CH_2 - CH (OH)– CH_3$

25. The phenomenon of removal of degeneracy of an energy state by the application of an external magnetic field is known as

A) Normalization B) Stark effect
C) Zeeman effect D) Kerr effect

26. In hydrogen spectrum, the series of lines appearing in visible region of spectrum are known as

A) Lymen series B) Paschen series
C) Pfund series D) Balmer series

27. The uncertainty in the position of an electron of mass 9.10×10^{-28} gram, moving with a velocity of 3.0×10^{9} cm/sec accurate up to 0.011% will be

A) 0.175 cm B) 0.0175 cm
C) 1.75 cm D) 17.05 cm

28. $[Fe_2(CO)_9]$ is a diamagnetic carbonyl compound because of

A) The presence of on CO as bridging group
B) The metal – metal (Fe – Fe) bond in the molecule
C) The presence of a monodentate ligand
D) The presence of nine CO ligands

29. Which of the following processes involves smelting?

A) $ZnCO_3 \xrightarrow{Heat} ZnO + CO_2$

B) $Fe_2O_3 + 3C \xrightarrow{Heat} 2Fe + 3CO$

C) $2PbS + 3O_2 \xrightarrow{Heat} 2PbO + 2SO_2$

D) $Al_2O_3 . 2H_2O \xrightarrow{Heat} Al_2O_3 + 2H_2O$

30. Two gases A and B bring about bleaching of flowers. A bleaches due to oxidation of dye while B bleaches by reducing the colouring matter. A and B are respectively:

A) SO_2 and Cl_2 B) O_2 and SO_2
C) Cl_2 and SO_2 D) H_2O_2 and SO_2

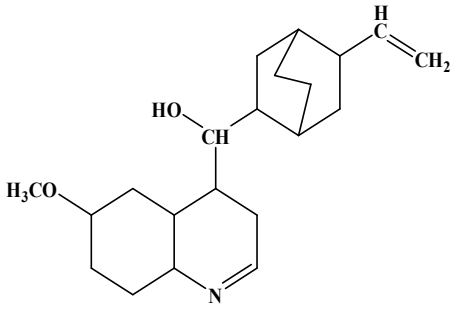
31. Ethylene glycol reacts with dimethyl terephthalate to form

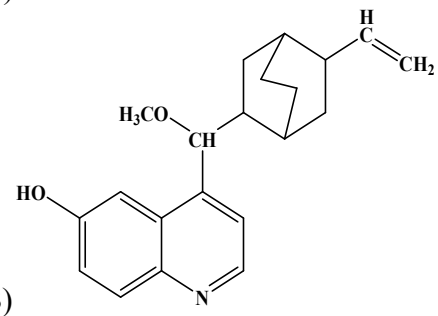
A) Teflon B) Orlon
C) Nylon - 6,6 D) Dacron

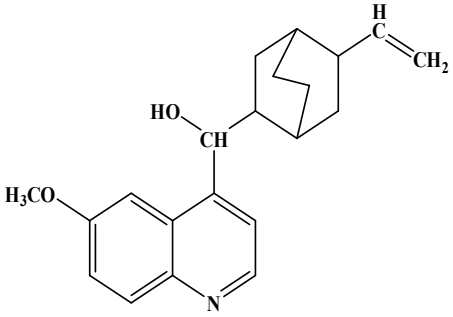
32. Which among the following Vitamin is insoluble in water?

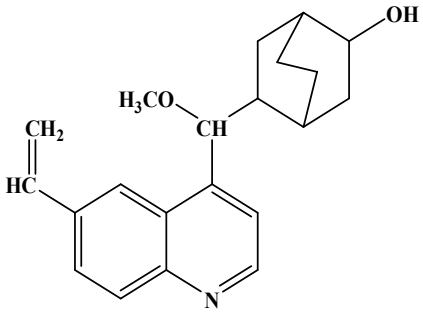
A) Vitamin A B) Vitamin B_6
C) Vitamin B_{12} D) Vitamin C

33. The structure of quinine is

A) 

B) 

C) 

D) 

34. For which of the following compounds, $\pi \rightarrow \pi^*$ transitions does not occur in UV- Visible spectroscopy?

A) Acetaldehyde B) Nitromethane
C) Azomethane D) Acetone

35. In the reaction, $A_{(s)} + B_{(g)} + \text{heat} \rightarrow 2C_{(s)} + 2D_{(g)}$ at equilibrium, pressure of B is doubled to re-establish the equilibrium. The factor by which concentration of D is changed is

A) $\sqrt{2}$ B) 2 C) 3 D) $\sqrt{3}$

36 The e.m.f. of a galvanic cell composed of two hydrogen electrodes is 272 mV. What is the *p*H of the solution in which the anode is immersed if the cathode is in contact with a solution of *p*H = 3.00?

A) 3.00 B) 6.70
C) 7.60 D) 10.0

37. Highly electropositive metals form

A) Sigma bonded organometallic compounds
B) Ionic organometallic compounds
C) Electron-deficient organometallic compounds
D) Electron rich organometallic compounds

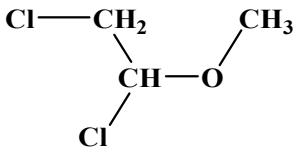
38. BCl_3 does not exist as dimer but BH_3 exist as dimer (B_2H_6) because

A) There is $p\pi \rightarrow p\pi$ back bonding in BCl_3, but BH_3 does not contain such bonding
B) Large size chlorine atoms do not fit between the small boron atom whereas hydrogen atoms does fit
C) Chlorine has larger electronegativity than hydrogen
D) Chlorine is more reactive than hydrogen

39. Nb and Ta have similar atomic and ionic radii because

A) They exist in the same group
B) They have similar chemical properties
C) Of lanthanide contraction
D) Of actinide contraction

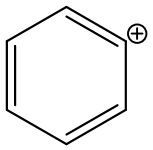
40. The proton NMR spectrum of

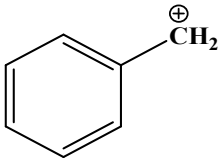


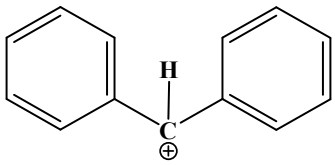
would show

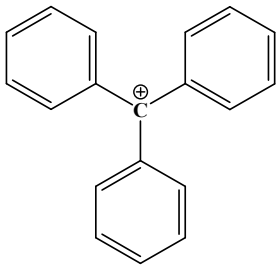
A) A three proton singlet, one proton triplet and two proton doublet
B) A three proton doublet, one proton triplet and two proton singlet
C) A three proton triplet, one proton doublet and two proton doublet
D) A three proton singlet, one proton singlet and two proton doublet

41. Which one among the following is the most stable cation?

A) 

B) 

C) 

D) 

42. Betaine is an intermediate in

A) Robinson annulations B) Wolff-Kishner reduction
C) Wittig reaction D) Birch reduction

43. $FeCl_3$ is applied to stop bleeding because

A) Fe^{3+} ions coagulate blood which is a negatively charged sol
B) Cl^- ions cause coagulation of blood by complexation
C) $FeCl_3$ reacts with the constituents of blood
D) $FeCl_3$ is soluble in blood

44. The magnitude of osmotic pressure, relative lowering of vapour pressure, depression in freezing point and elevation in boiling point in all colloidal disperse is

A) Large B) Very large
C) Negligible D) Small

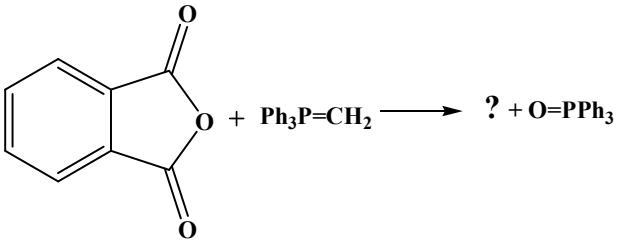
45. The effect of temperature on reaction rate is given by

A) Vant Hoff equation B) Arrhenius equation
C) Claussius Claperyon equation D) Kirchoff's equation

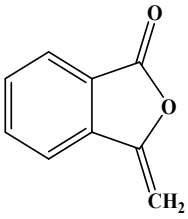
46. The reaction: $2\ FeCl_3 + SnCl_2 \rightarrow 2\ FeCl_2 + SnCl_4$ is a

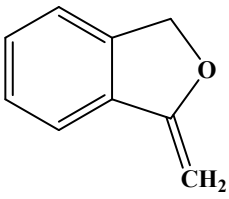
A) Second order reaction B) Third order reaction
C) First order reaction D) Zero order reaction

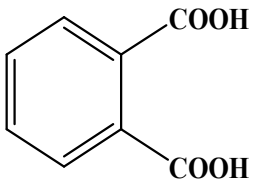
47.

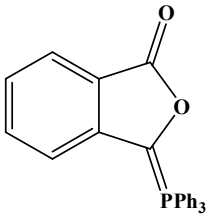


Identify the product.

A) 

B) 

C) 

D) 

48. Among the following the aromatic compound is

A) 

B) 

C) 

D) 

49. Rate of polymer formation in free radical chain polymerization is
   A) Independent of initial concentration
   B) Directly proportional to the square root of initial concentration
   C) Proportional to the square root of initiator concentration
   D) Proportional to the square of initial concentration

50. Mosaic gold is
   A) Naturally occurring silica
   B) Crystalline stannic sulphide
   C) An alloy which shines like gold
   D) Impure form of gold

51. Oxygen is prepared in the laboratory by
   A) Heating potassium chlorate B) Heating potassium oxalate
   C) Heating non-metallic oxides D) Heating potassium permanganate

52. Plutonium is considered important, because
A) It is a transuramic material
B) It can be used in fusion reactions
C) It is absolutely necessary for nuclear reactions
D) It can directly be used for nuclear explosion

53. Critical pressure of a gas is the
A) Pressure required to liquefy a gas above critical temperature
B) Pressure required to liquefy a gas at critical temperature
C) Pressure at the temperature below critical temperature at which it became liquid
D) Pressure at which it becomes liquid

54. An ideal gas is expanded against zero pressure adiabatically. Which of the following quantities will be equal to zero?
A) ΔQ B) ΔS
C) ΔE D) ΔA

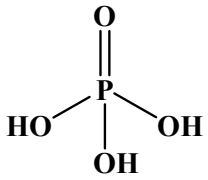
55. The solution which will be closer to the ideal solution is
A) Normal solution
B) Saturated solution
C) Dilute solution
D) Super saturated solution

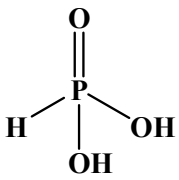
56. Synthetic detergents are
A) A mixture of sodium salts of aromatic compound and sodium chloride
B) A mixture of sodium carbonate and sodium chloride
C) Sodium salts of fatty acids
D) Calcium salts, magnesium salt and hydrochloric acid

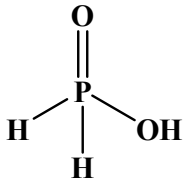
57. In the energy-dihedral angle diagram of butane, the Gauche-Staggered form is found in a trough which is
A) Above anti-staggered and below fully eclipsed forms
B) Below anti-staggered and above fully eclipsed forms
C) Above both anti-staggered and fully eclipsed forms
D) Below both anti-staggered and fully eclipsed forms

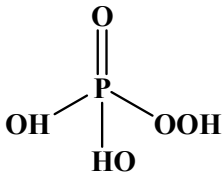
58. Meso compounds are usually optically inactive, because they have
A) No chiral centers
B) At least four chiral centers
C) Chiral centers having two similar groups or atoms
D) Chiral centers but internally compensated

59. The correct structure of hypophosphorous acid is

A) 

B) 

C) 

D) 

60. Which of the following species of ammoniacal solution of sodium acts as a reducing agent?
A) Sodium atom B) Sodium hydride
C) Solvated electron D) Solvated sodium ion

61. The donor atoms in ethylenediamine tetraacetic acid are
A) Two nitrogen and two oxygen
B) Two nitrogen and four oxygen
C) Four nitrogen and two oxygen
D) Three nitrogen and three oxygen

62. The relation between the crystal field stabilization energy of octahedral (Δ_o) and tetrahedral (Δ_t) complex is
A) $\Delta_t = \frac{1}{6}\Delta_o$ B) $\Delta_t = \frac{4}{9}\Delta_o$ C) $\Delta_t = \frac{1}{4}\Delta_o$ D) $\Delta_t = \frac{1}{2}\Delta_o$

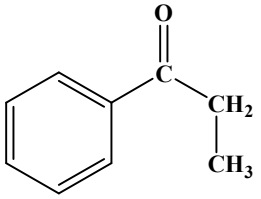
63. Atoms per unit cell in simple cubic, body centered and face centered cubic are respectively
A) 4,2,1 B) 1,4,2 C) 2,1,4 D) 1,2,4

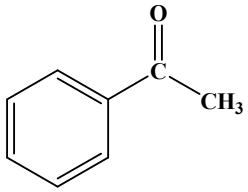
64. The Schrodinger wave function, Ψ represents
A) Probability amplitude B) Probability density
C) Probability distribution D) Radial probability

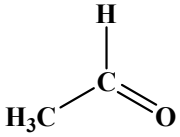
65. Ammonium carbonate when heated to 473K gives a mixture of ammonia and carbon dioxide vapour with a density of 13.0. The degree of dissociation of ammonium carbonate is
A) 1.50 B) 0.50
C) 2.00 D) 1.00

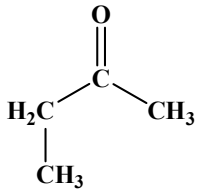
66. Conversion of one conformation into another of the same compound involves
A) Bond breaking and then bond making
B) Breaking of bonds only
C) Twist about a single bond
D) Making of bond only

67. A compound gave a positive iodoform test, but did not reduce silver nitrate in ammonia solution. The compound could be

A] 

B] 

C] 

D] 

68. Silver acetate reacts with bromine to form methyl bromide, carbon dioxide and silver bromide. This is an example of

A) Wurtz reaction B) Etard reaction
C) Hunsdiecker reaction D) Perkin reaction

69. Alums purify muddy water by

A) Dialysis B) Adsorption
C) Coagulation D) Forming a true solution

70. Which among the following represents a basic buffer?

A) Boric acid + borax
B) Acetic acid + sodium acetate
C) Phthalic acid + potassium acid phthalate
D) Dipotassium phthalate + potassium acid phthalate

71. A conductance cell is platinized

A) To prolong its service
B) To avoid temperature effect
C) To avoid the capacitance of the cell
D) To avoid polarization effect

72. The hybridization of *I* in IF_7 molecule is

A) sp^3 B) sp^3d^3
C) sp^3d D) sp^3d^2

73. The shape of ClO^{3-} according to VSEPR theory will be

A) Linear B) Planar - triangular
C) Pyramidal D) Square planar

74. The intense blue colour of $[CoCl_4]^{2-}$ is due to the transition type of

A) *d-d* transition B) Charge transfer (L-SM)
C) Charge transfer (M-L) D) $p\pi$-$d\pi$ transition

75. Both stearic and linoleic acid have 18 carbons. Linoleic acid is unsaturated, while stearic acid is saturated. The melting point of stearic acid is
A) Higher than linoleic acid B) Lower than linoleic acid
C) Same as linoleic acid D) Double than linoleic acid

76. The primary structure of protein refers to
A) Whether the protein is fibrous or globular
B) The amino acid sequence in peptide chain
C) The orientation of the amino acid side chain in space
D) The presence or absence of α- helix

77. The mutarotation of glucose is characterized by
A) A change from an aldehyde to ketone structure
B) A change of specific rotation from a(+) to a(-) value
C) The presence of an intermediate bridge structure
D) The irreversible change of the α-D to the β-d form

78. What would happen when a solution of potassium chromate is treated with an excess of dilute nitric acid?
A) Cr^{3+} and $Cr_2O_7^{2-}$ are formed
B) $Cr_2O_7^{2-}$ and H_2O are formed
C) CrO_4^{2-} is reduced to +3 state of Cr
D) CrO_4^{2-} is oxidized to +7 state of Cr

79. The final step of the metallurgical extraction of copper metal from copper pyrites takes place in a Bessemer converter. The reaction taking place is
A) $Cu_2S + O_2 \rightarrow 2Cu + SO_2$
B) $4Cu_2O + FeS \rightarrow 8Cu + FeSO_4$
C) $2Cu_2O + Cu_2S \rightarrow 6Cu + SO_2$
D) $Cu_2S + 2FeO \rightarrow 2CuO + 2Fe + SO_2$

80. A complex of platinum, ammonia and chlorine produces four ions per molecule in the aqueous solution. The structure pertaining to the above observation is
A) Hexaammineplatinum(IV) chloride
B) Tetraamminedichloroplatinum(IV) chloride
C) Diaamminetetrachloro-platinum(IV)
D) Pentaamminechloroplatinum(IV) chloride

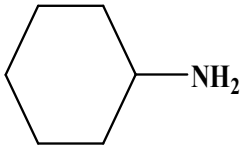
81. Rare gases are sparingly soluble in water. This is because of the existence of
A) Hydrogen bonding
B) Dipole – dipole interactions
C) Induced dipole – induced dipole interactions
D) Dipole - induced dipole interactions

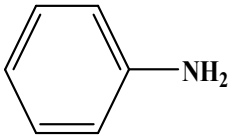
82. Lithium cannot form alums because of its
A) High electropositivity B) High ionization energy
C) Small size D) Lower number of electrons

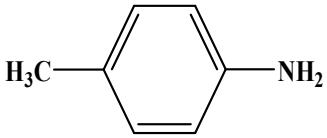
83. Which among the following is used as a PVC stabilizer?

A) Organolithium compounds B) Organotin compounds
C) Organotitanium compounds D) Organoaluminium compounds

84. Rank the following compounds in order of increasing base strength

i) 

ii) 

iii) 

A) ii), iii), i) B) iii), ii), i)
C) i), ii), iii) D) ii), i), iii)

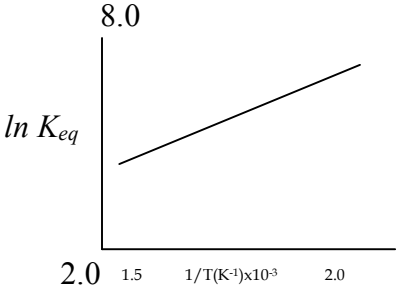
85. Which of the following reaction does not produce benzene as one of the products?

A) Treating benzenediazonium chloride with H_3PO_2
B) Distilling phenol with zinc dust
C) Fusing sodium benzoate with sodium hydroxide
D) Fusing sodium benzenesulphonate with sodium hydroxide

86. Pyridine undergoes nucleophilic substitution with fuming sulphuric acid at 350°C to give

A) 2-pyridinesulphonic acid B) 4-pyridinesulphonic acid
C) 3-pyridinesulphonic acid D) 2,4-pyridinedisulphonic acid

87. A schematic plot of *ln* K_{eq} versus inverse of temperature for a reaction is shown below:



The reaction must be

A) Exothermic
B) Endothermic
C) One with negligible enthalpy change
D) Highly spontaneous at ordinary temperature

88. The Joule Thomson coefficient ( ) is defined by

A) $(\frac{\partial P}{\partial T})_H$ B) $(\frac{\partial P}{\partial T})_S$ C) $(\frac{\partial T}{\partial P})_H$ D) $(\frac{\partial T}{\partial P})_S$

89. Amount of gas adsorbed per gram of adsorbent increases with pressure, but after certain limit, adsorption becomes constant. It is where
A) Multilayers are formed B) Desorption takes place
C) Temperature is increased D) Absorption also started

90. The oxidation of primary alcohol with a mixture of sodium dichromate and sulphuric acid is not a good method for the preparation of the corresponding aldehyde because
A) The product will be the corresponding alkane
B) Sodium dichromate and sulphuric acid cannot oxidize primary alcohol
C) The aldehyde produced will be oxidized further
D) The product will be the corresponding ketone

91. Which of the following is a determinate error?
A) Relative error B) Erratic error
C) Absolute error D) Personal error

92. A set of measurement of an experimental data shows the values 28.7, 28.9 and 28.8 while the true value is 24.4, thus the experimental data shows
A) Poor accuracy but good precision
B) Good accuracy but poor precision
C) Good accuracy and good precision
D) Poor accuracy and poor precision

93. Which of the following best describes the carbon – lithium bond?
A) The carbon – lithium bond is almost ionic with carbon negative and lithium positive
B) The carbon – lithium bond is almost ionic with carbon positive and lithium negative
C) The carbon – lithium bond is covalent and non-polar
D) The carbon – lithium bond is covalent and somewhat polar

94. The technique electrogravimetry is based on
A) Activation polarization
B) Concentration polarization
C) Electrodeposition
D) Ion-exchange

95. The carboxylic acids formed in the ozonolysis of 2-pentyne are
A) One molecule of acetic acid and one molecule of propionic acid
B) Two molecule of acetic acid alone
C) One molecule of acetic acid and one molecule of formic acid
D) Two molecules of propionic acid alone

96. Why only As^{3+} gets precipitated as As_2S_3 and not Zn^{2+} as ZnS when H_2S is passed through an acidic solution containing As^{3+} and Zn^{2+}?
A) Solubility product of As_2S_3 is less than that of ZnS
B) Enough As^{3+} are present in acidic medium
C) Zinc salt does not ionize in acidic medium
D) Solubility product changes in presence of an acid

97. Why are strong acids generally used as standard solutions in acid-base titrations?
A) The pH at the equivalent point will always be seven
B) They can be used to titrate both strong and weak bases
C) Strong acids form more stable solutions than weak acids
D) The salts of strong acid do not hydrolysis

98. The addition of a catalyst to the reaction system
A) Increases the rate of forward reaction only
B) Increases the rate of reverse reaction
C) Increases the rate of forward reactions but decreases the rate of backward reaction
D) Increases the rate of forward as well as backward reaction equally

99. Which of the following is an antidote for lead poisoning?
A) $CoCl_3$ B) Cisplatin
C) EDTA D) DMG

100. The complex entities $[Fe(CN)_6]^{4-}$ and $[Fe(H_2O)_6]^{2+}$ differ in
A) Geometry and magnetic moment
B) Colour and magnetic moment
C) Colour, geometry and magnetic moment
D) Colour and geometry

101. In Wilkinson's catalyst, the hybrid state of central metal ion and shape of complex are respectively
A) d^2sp^3, octahedral B) sp^3, tetrahedral
C) dsp^2, square planar D) sp^3d^2, octahedral

102. The depolarizer used in dry cell batteries is
A) Ammonium chloride B) Manganese dioxide
C) Potassium hydroxide D) Sodium trisulphide

103. Which of the following molecules shows microwave rotational spectra?
A) CH_3Cl B) SF_6
C) H_2 D) CH_4

104. A molecule which has n-fold axis of symmetry and a plane of symmetry perpendicular to the characteristic axis of symmetry belongs to the group
A) C_n B) C_{nn}
C) C_{nh} D) D_n

105. What is the effect of addition of sugar on the boiling and freezing point of water?
A) Both boiling point and freezing point increase
B) Both boiling point and freezing point decrease
C) Boiling point decreases, freezing point increases
D) Boiling point increases, freezing point decreases

106. The hydrogen electrode can exhibit electrode potential less than zero, if
A) Hydrogen is bubbled through the solution at high pressure
B) Concentration of hydrogen ion in solution is increased
C) Concentration of hydrogen ion in solution is decreased
D) Hydrogen ions are removed from the solution

107. The function of the acid catalyst in the first step of the Fischer esterification of a carboxylic acid is
A) To protonate the carbonyl carbon
B) To protonate the carbonyl oxygen
C) To protonate the –OH group of the alcohol
D) To protonate the –OH oxygen of the carboxylic acid

108. The major effect of vulcanization on the molecular structure of natural rubber is that vulcanization
A) Shortens the length of the polymeric chain
B) Induces branching into the polymeric chain
C) Keeps the polymeric chain from sliding past each other
D) Inverts the configurations of the chiral centers of the polymeric chain

109. Which of the following reaction scheme will lead to the formation of alanine?
A) CH_3-CH_2-COOH treated with PBr_3 and Br_2, then water then excess of ammonia
B) CH_3-CH_2-COOH treated with excess of ammonia then DCC, then CF_3COOH
C) CH_3-COOH treated with PBr_3 and Br_2, then water then excess of ammonia
D) CH_3-COOH treated with acetamide in presence of a base

110. Which of the following ligand is positively charged?
A) Ammonium ion B) Sodium ion
C) Isothiocyanate ion D) Hydrazinium ion

111. Photolysis of ketones involving cyclic transition state followed by abstraction of γ-hydrogen and cleavage is known as
A) Norrish type - I process
B) Norrish type - II process
C) β- Elimination reaction
D) Cycloaddition reaction

112. In both DNA and RNA, heterocyclic base and phosphate ester linkage are at
A) C'_2 and C'_5 respectively of the sugar molecule
B) C'_5 and C'_2 respectively of the sugar molecule
C) C'_5 and C'_1 respectively of the sugar molecule
D) C'_1 and C'_5 respectively of the sugar molecule

113. Addition of oxygen to anthracene in presence of light is known as
A) Photochemical oxidation
B) Photochemical reduction
C) Photochemical addition
D) Photochemical elimination

114. In the electrolysis of dilute sulphuric acid using platinum electrode
A) Hydrogen is liberated at the cathode
B) Oxygen is produced at the cathode
C) Sulphur is obtained at the cathode
D) Sulphur is obtained at the anode

115. A metal in its highest oxidation state can
A) Act as reducing agent only
B) Undergo further oxidation
C) Act as oxidizing agent only
D) Act as a redox agent

116. The scanning transmission electron microscope (STEM) is used to determine the
A) Charge of the colloid
B) Size of the colloid
C) Colour of the colloid
D) Nature of the colloid

117. In Huckel Molecular orbital theory of conjugate systems, the basic functions are
A) $2p_x$
B) $2p_x$ or $2p_y$
C) 1_s
D) 2_s

118. In CsCl crystal lattice of Cs^+ occupy
A) Tetrahedral void
B) Octahedral void
C) Cubic void
D) Alternating tetrahedral void

119. According to the Variation theorem, the approximate energy corresponding to the approximate wave function Ψ
A) is lesser than the true energy
B) is greater than the true energy
C) is equal to the true energy
D) has no correlation with the true energy

120. Classien rearrangement is an example of
A) [1,3] sigmatropic rearrangement
B) [1,5] sigmatropic rearrangement
C) [2,4] sigmatropic rearrangement
D) [3,3] sigmatropic rearrangement

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